

REMARKS

The present invention relates to a stent and to a method of treatment of a patient needing a stent or a patient needing removal of a stent.

It is first of all appreciated that in the new Office Action dated March 30, 2011, the previous rejections based on U.S. Patent 5,716,410 (Wang et al) or based on Wang et al in view of U.S. Patent 6,388,043 (Langer et al) were not repeated, and are therefore understood to have been withdrawn. However, claims 3, 4, 17 - 30, 32, 35, 38 - 40, and 46 are now rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent 5,800,516 (Fine et al) in view of Langer et al (i.e., the previously cited U.S. Patent 6,388,043) or alternately based on Fine et al in view of Langer et al and US 2004/0034405 (Dickson).

With respect to the primary reference, Fine et al was cited as disclosing a method of treatment of a patient needing a stent. The Examiner noted certain features in connection therewith, but the Examiner recognized that Fine et al does not disclose a photo-switchable SMP (shape memory polymer) as presently claimed. The Examiner has asserted that it would be obvious to one of ordinary skill in the art to have used the SMP of Langer et al to construct the stent of Fine et al, allegedly because the light induced shape change would be less invasive of surrounding tissue and allegedly because the skill artisan would recognize the benefit of having a contracted and expanded state memory so that deployment to the expanded state is more controlled. Alternately, Dickson was cited (at page 4 of the Office Action) as teaching that a catheter can be equipped with a suitable light source for irradiating a stent to cause shape change of an SMP.

Applicant has amended the claims herein including a spelling correction in claim 38 and addition of new claim 47 directed to a preferred embodiment of the method of independent claim 35. Support is provided, e.g., in paragraph [0103] of Application Publication No. US 2007/0129784 A1.

Applicant respectfully traverses the rejections, and submits that the very specifically claimed method of treatment of a patient needing a stent in accordance with independent claim 32 and needing removal of a stent in accordance with independent claim 35 hereinabove would not be obvious based on the combination of art now cited.

With respect to the previous rejection, now withdrawn, Applicant had noted that Wang et al, the primary reference was directly exclusively to a thermally switchable SMP, and did not disclose a photo-switchable SMP, nor the use of a catheter equipped with a suitable light source. Consequently, with respect to independent claim 32, Wang et al could not have been considered to disclose to irradiate the stent with light of a suitable wavelength to fix the stent in a temporary shape *in vivo*. With respect to independent claim 35, Wang et al did not disclose irradiation of a stent with light to thereby activate the shape memory effect and the recovery of the permanent compressed shape of the stent.

The Fine et al reference, cited as the primary reference in the present rejection, is equally deficient, and as was recognized by the Examiner (at page 3), does not disclose a photo-switchable SMP as claimed. Fine et al appears only to be concerned with heating as a technique for activating the SMPs used in the stents thereof.

Therefore, it must be noted that Langer et al, although disclosing a photo-switchable SMP in general (col. 11, line 43 - col. 12, line 4) contains no specific disclosure or suggestion to use photo-switchable SMPs as a stent material.

Particularly, and considering the recitations of independent claims 32 and 35 hereinabove, Langer et al provides no teaching or suggestion for triggering a stent comprising a photo-switchable SMP; i.e., Langer et al does not disclose a catheter equipped with a light source, nor the use of such for *in vivo* programming and triggering a photo-switch with a stent.

Therefore, the asserted combination of Fine et al and Langer et al would not enable a person of ordinary skill in the art to achieve the presently claimed invention.

In the alternative rejection under 35 U.S.C. § 103(a), the Examiner additionally cited the Dickson reference. The Examiner has referred particularly to paragraph [0035] of Dickson. The disclosure therein refers to a wide variety of techniques that may be used for heating a heat-shape memory polymeric material, including heating with warm water or saline solution, electrical heat, light, and/or radiation. However, the subsequent specific disclosure of Dickson is clearly directed to heating, e. g., using a resistive wire. Therefore, it does not appear, in reality, that a person of ordinary skill in the art would be lead to modify the Fine et al reference in view of Langer et al and further in view of Dickson, so as to achieve the very specifically claimed present invention, which utilizes at least one non-metallic photo-switchable shape memory polymer (SMP) and irradiates the stent with light.

Therefore, since only the present Applicant has recognized the particular advantage of photo-switchable stents avoiding the application of heat as is common to the cited prior cited art

references in order to program and/or recover the stent, the presently claimed invention constitutes an unexpected advance that was not recognized in any of the cited prior art references.

Furthermore, as opposed to the limits imposed in the case of heated SMPs, which are limited in the medical field to polymeric components having transition temperatures that are above body temperature but not above about 50° or 60° C (in order to avoid harm to the body), the photo-switchable materials of the present claimed invention are not so limited.

Applicant respectfully submits that the rejections under 35 U.S.C. § 103(a) based on Fine et al in view of Langer et al, or alternately based on Fine et al in view of Langer et al Dickson should now be withdrawn.

In view of the above, reconsideration and allowance of claims 3, 4, 17 - 30, 32, 35, 38 - 40, 46 and 47 of this application are now believed to be in order, and such actions are hereby earnestly solicited.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned attorney at the local Washington, D.C. telephone number listed below.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No.: 10/560,452

Attorney Docket No.: Q116797

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,


SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

23373

CUSTOMER NUMBER

Date: September 29, 2011


Joseph V. Ruck, Jr.
Registration No. 26,577